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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,041	07/10/2007	Yoshitsugu Morita	DC10032PCT (71,051-071)	3380
27305 7590 02/16/2011 HOWARD & HOWARD ATTORNEYS PLLC 450 West Fourth Street Royal Oak, MI 48067			EXAMINER HUDA, SAEED M	
			ART UNIT 1742	PAPER NUMBER
			MAIL DATE 02/16/2011	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/599,041	Applicant(s) MORITA ET AL.	
	Examiner SAEED M. HUDA	Art Unit 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The response filed on 01/18/2011 has been fully considered and entered into the record. Claims 1-10 are pending in the instant application. Claim 10 is withdrawn from consideration as directed to non-elected subject matter.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyajima et al. (US 2002/0015748 A1) in view of Lee et al. (EP-A-0 99798).

a. Regarding claim 1, Miyajima et al. teach a method of manufacturing a semiconductor device sealed in a cured resin body by placing an unsealed semiconductor device into a mold and subjecting a curable resin composition that fills the spaces between the mold and the unsealed semiconductor device to compression molding under a predetermined molding temperature ([0001] and figure 1). Miyajima et al. fail to teach the use of a liquid silicon composition, wherein the viscosity at room temperature is of 90 Pa·s or less or the claimed time interval.

Lee et al. teach a compression set of a hydrosilylation-curable liquid silicone composition used in cured injection moldable compositions (abstract).

Lee et al. go on to teach that the silicon composition has a viscosity of less than 90 Pa·s at room temperature (paragraph 66 and examples 1-2) and is suitable for the encapsulation of chip scale packages (paragraph 19). It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the invention of Miyajima et al. by selecting the invention of Lee et al. because this will yield desirable properties such as low alpha particle emissions, very good moisture resistance, excellent electrical insulation, excellent thermal stability, and very high ionic purity ([0002]).

Applicant states that the curable silicone composition may be comprised at least of the following components:

- an organopolysiloxane having at least two alkenyl groups per molecule;
- an organopolysiloxane having at least two silicon-bonded hydrogen atoms per molecule;
- a platinum-type catalyst;
- a filler ([0068]).

Applicant also teach that the curing temperature of the silicone is from 50 °C – 150 °C ([0067])

Lee et al. teach the silicone composition can be made of:

- polydiorganosiloxane containing an average of at least two silicon-bonded alkenyl groups per molecule (page 4, lines 9-10) (similar to that of Applicant's invention) ([0022])

- an organohydrogen polysiloxane having average of at least three silicon-bonded hydrogen atoms per molecule and an average of not more than one silicone-bonded hydrogen atom per molecule ([0041])
- a platinum group metal compound that promotes the addition reaction of the above components([0057])
- an inorganic filler ([0063])

Lee et al. teach that the curing temperature of the silicone is from 100°C – 150°C ([0070])

Therefore, there are significant similarities between the type of silicone and curing temperature of the invention of Applicant and Lee et al.

Miyajima et al. in view of Lee et al. fail to teach the claimed time interval.

The time interval required for a silicone sample to go from one torque to another torque is dependent on cure temperature and the silicone composition. Therefore this is a result effective variable. Consequently, it would have been obvious to one having ordinary skill in the art at the time of the invention to have conducted routine experimentation to determine the optimum time interval required for a silicone sample to go from one torque to another torque in order to obtain the desired cure temperature and the silicone composition.

b. Regarding claims 2-3, Miyajima et al. in view of Lee et al. teach that the silicone composition is a hydrosilylation-curable liquid silicone composition (Lee

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et al. paragraphs 57-58) and that the cured silicone has a modulus of elasticity of 1 GPa or less (Lee et al. table 1);

c. Regarding claim 4, Miyajima et al. teach clamping the semiconductor device between the upper mold and the lower mold, and compression molding the adopted resin (figure 2).

d. Regarding claim 5, Miyajima et al. teach that the obtained sealed assembly is cut into separate sealed semiconductor devices (figure 5).

e. Regarding claim 6, Miyajima et al. teach that the semiconductor device comprises chips 10 on a printed circuit board 12 (substrate) ([0045] and figure 1) and where the chips are electrically connected via bonding wires ([0088]).

f. Regarding claim 7, Lee et al. teaches that the silicone composition exhibits rapid flow around and/or under a silicon chip ([0018]) and, as stated above, the chip 10 is placed on the printed circuit board 10 and the chips are electrically connected via bonding wires. Thus, the silicone would be applied onto the surface that supports the semiconductor chips of the printed circuit board.

g. Regarding claims 8-9, Miyajima et al. teach the use of release films (paragraph 50) held against the inner surface of the mold by air suction (paragraph 12).

Response to Arguments

4. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection, to the extent that the arguments are applicable to the new grounds of rejection; they are addressed below.

As to the Improper Finality of the Instant Office Action

Applicant request that the finality of the previous office action be reviewed. The Examiner has, herein, issued another non-final rejection.

As to the New Rejection of Claims 1-9 Under 35 U.S.C. §103(a) Over Miyajima et al. in View of Lee et al. That Rely Upon Principles of Inherency

Applicant states that the instant case is not on in which there is a question of whether a new property of an old product is being claimed, instead, the instant case pertains to discovery of previously unidentified curing parameters of a curable liquid silicone composition. In response, the Examiner has issued a rejection stating that the the time interval required for a silicone sample to go from one torque to another torque is dependent on cure temperature and the silicone composition. Therefore this is a result effective variable.

Applicant then states that Lee et al. teaches a wide range of curing temperatures. It should be noted that Applicant teaches that the curing temperature of the silicone is from 50 °C – 150 °C ([0067]), while Lee et al. teaches that the curing temperature of the silicone is from 100 °C – 150 °C ([0070]). Therefore, there is significant overlap between the curing temperatures of Applicant and those of Lee et al.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SAEED M. HUDA whose telephone number is 571.270.5514. The examiner can normally be reached on 8:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on 571.272.1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SAEED M. HUDA/
Examiner, Art Unit 1742

/Christina Johnson/
Supervisory Patent Examiner, Art Unit 1742